

MEMORANDUM 7/29/2001

SUBJECT: Residue Chemistry Chapter For The Diuron Reregistration Eligibility Decision (RED) Document.

DP Barcode: D274492
Chemical No. 035505
Case No: 0046

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Attached is the Residue Chemistry Chapter for the Diuron Reregistration Eligibility Decision (RED) document. This chapter was completed by the Dynamac Corporation under supervision of HED and has undergone secondary review/modification in Reregistration Branch 2 for consistency with current EPA policies. This document was reviewed by the ChemSac on 7/25/01 and recommendations have been incorporated.

The existing residue chemistry database is incomplete.

Label revisions are required for many crops in order to reflect the parameters of use patterns for which residue data are available. Many of the revisions concern retreatment intervals, Preharvest intervals (PHI's) and rotational crop restrictions.

The qualitative nature of the residue of diuron in plants and animals has been adequately identified/characterized. The Agency is recommending that the tolerance expression for diuron be revised to include metabolites hydrolyzable to 3,4-dichloroaniline.

Adequate analytical methods exist for data collection and tolerance enforcement in plants. Independent laboratory validation of the enforcement method is required for livestock methods prior to Agency validation.

Multiresidue methods for diuron and metabolites of toxic concern are required for plants and livestock.

Adequate storage stability data are available for many supported crops.

Results from animal feeding studies suggest that tolerances are necessary for poultry or egg commodities and for meats and milk. Residue data are not available for several potential feed items. If the maximum dietary burden does not increase when recalculated from all potential feed items after acceptable field trial data are submitted then the established tolerances for residues in fat, meat, and meat byproducts of cattle, goats, hogs, horses, and sheep can be lowered.

Adequate residue data exist for some processed food/feed commodities.

The reregistration requirements for magnitude of the residue in plants are not fulfilled for: alfalfa forage; globe artichoke; barley hay; cotton gin byproducts; field corn aspirated grain fractions; field corn forage and stover; filbert; grass forage, hay, seed screenings, and straw; lemon; pear; oat forage, hay; olive; field pea vines and hay; sorghum aspirated grain fractions, stover, and forage; wheat forage and hay. Additional crop field trial data are required for these commodities.

The reregistration requirements for magnitude of the residue in plants are fulfilled for: alfalfa hay; apple; asparagus; banana; barley grain, straw; blackberry; blueberry; clover forage and hay; field corn grain; popcorn grain and popcorn stover; cotton seed; gooseberry; grape; grapefruit; loganberry; macadamia nut; oat grain and straw; orange; papaya; field pea seed; peach; pecan; peppermint; pineapple; raspberry; sorghum grain; sugarcane; trefoil forage and hay; vetch forage and hay; walnut; and wheat grain, aspirated grain fractions, and straw. Adequate field trial data depicting diuron residues of concern following applications made according to the maximum registered use patterns have been submitted for these commodities or data have been translated from appropriate crops.

The registrants have indicated that a Section 3 tolerance for diuron in/on catfish is desired. Since the metabolism committee is concerned with a monochloronated diuron metabolite identified in water, a metabolism study of diuron in fish is required. The registrants are directed to OPPTS 860.1400 for study guidelines and encouraged to submit a study protocol prior to initiating the study.

Field rotational crop trials have been conducted on representative crops at less than the maximum application rates with 1 year plant back intervals and some labels indicate a 2 year plant back interval. RRB2 recommends that the registrants provide additional data to support the higher application rate and believes that the 2-yr PBI is not practical. The registrants should remove the 2-yr PBI from the registered uses and provide data to support the 3.2 lb ai/A application rate and 1-yr PBI. Until adequate data are supplied labels should be amended to restrict rotational crops to those crops which currently are registered as primary crops..

cc: JSPunzi (RRB2), Diuron Reg. Std. File, Diuron SF, RF, LAN.

Diuron
PC Code 035505; Case 0046
DP Barcode D274492

**Reregistration Eligibility Decision;
Residue Chemistry Considerations**

May 29, 2001

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Submitted to:
U.S. Environmental Protection Agency
Arlington, VA

Submitted by:
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DIURON

REREGISTRATION ELIGIBILITY DECISION

RESIDUE CHEMISTRY CONSIDERATIONS

PC Code 035505; Case 0046

(DP Barcode D274492)

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DIURON

REREGISTRATION ELIGIBILITY DECISION

RESIDUE CHEMISTRY CONSIDERATIONS

PC Code 035505; Case 0046

INTRODUCTION

Diuron [3-(3,4-dichlorophenyl)-1,1-dimethylurea] is an herbicide currently registered for use on a variety of fruit, vegetable, nut, and field crops including alfalfa, apple, artichoke, asparagus, banana and plantain, winter barley, bermudagrass, blueberry, caneberry, citrus, red clover, field corn, cotton, filbert, gooseberry, grape, grass seed crops, macadamia nut, oats, olive, papaya, field pea, peach, pear, pecan, peppermint, pineapple, grain sorghum, sugarcane, trefoil, walnut, and winter wheat.

The reregistration of diuron is being supported by Griffin Corporation, E.I. du Pont de Nemours and Company, Drexel Chemical Company, and Aventis CropScience USA. The diuron formulation classes registered to these companies for food/feed uses include the wettable powder (WP), emulsifiable concentrate (EC), dry flowable (DF), and flowable concentrate (FIC). These formulations are typically applied as preplant, preemergence, soil directed, or postemergence treatments using ground or aerial equipment.

REGULATORY BACKGROUND

Diuron was the subject of a Reregistration Standard Guidance Document dated 9/83; the Residue Chemistry Science Chapter of the Guidance Document was dated 6/25/82. The Residue Chemistry Chapter Update of the Diuron Reregistration Standard was issued on 3/9/92. These documents summarized the available residue chemistry data and specified reregistration requirements in support of food/feed uses. Several data submissions have been received and evaluated since the Update. The information contained in this document outlines the Residue Chemistry Science Assessments with respect to the reregistration of diuron. We note that although Du Pont was the primary registrant of diuron when the Update was issued, Du Pont has since transferred, cancelled, or substantially reduced its registered uses of diuron; Griffin LLC is now the primary registrant of diuron, and is taking the lead in a data sharing agreement with the other diuron registrants.

Diuron has been classified as a “known/likely” human carcinogen by all routes.

Tolerances for residues of diuron in/on plant and livestock commodities are established under 40 CFR §180.106. Diuron tolerances are expressed as diuron *per se*. HED is now recommending that the tolerance expression for diuron be revised to include metabolites hydrolyzable to 3,4-dichloroaniline (3,4-DCA). This determination is based on the results of the reviewed plant and livestock metabolism

studies. Adequate residue analytical methods are available for determination of diuron total toxic residues.

GLN 860.1200: Directions for Use

A search of the Agency's REFS database, conducted on 2/8/01, identified seven active diuron end-use products (EPs) registered to diuron data submitters under FIFRA Section 3 for use on food/feed crops. These EPs, including the associated Special Local Need (SLN) registrations under FIFRA Section 24 (c), are listed in Table A1.

Table A1. Diuron EPs with Food/Feed Uses Registered to Diuron Data Submitters.

| EPA Reg. No. | Label Acceptance Date ¹ | Formulation | Product Name |
|--|------------------------------------|----------------------------|-------------------------------|
| Aventis CropScience USA | | | |
| 264-634 | 4/14/98 | 0.5 lb/gal EC ² | Ginstar® EC Cotton Defoliant |
| 264-661 | 6/18/96 | 25% WP ³ | Dropp® Ultra Cotton Defoliant |
| E.I. du Pont de Nemours and Co. | | | |
| 352-505 | 7/1/99 | 40% DF ⁴ | Krovar® I DF Herbicide |
| Griffin Corporation | | | |
| 1812-257 ⁵ | 3/15/01 | 4 lb/gal FIC | Direx 4L® Herbicide |
| 1812-362 ⁶ | 3/15/01 | 80% DF | Karmex® DF Herbicide |
| Drexel Chemical Company | | | |
| 19713-36 | 3/15/01 | 4 lb/gal FIC | Diuron 4L Herbicide |
| 19713-274 ⁷ | 11/30/00 | 80% WP | Diuron 80 Herbicide |

1. Date of the most recently EPA-approved label found in the Pesticide Product Label System (PPLS).
2. This product is a multiple-active-ingredient (MAI) product, containing thidiazuron at 1 lb/gal.
3. This product is an MAI product, containing thidiazuron at 50%.
4. This product is an MAI product, containing bromacil at 40%.
5. Including SLN LA980002.
6. Including SLN LA980003 and TX000011.
7. Including SLN OR950032.

A comprehensive summary of diuron food/feed use patterns, based on the registered product labels of the diuron data submitters, is presented in Table A2.

A tabular summary of the residue chemistry science assessments for reregistration of diuron is presented in Table B. The status of reregistration requirements for each guideline topic listed in Table B

is based on the use patterns registered to the members of the Diuron Task Force, the basic registrants. When end-use product DCIs are developed (e.g., at issuance of the RED), RD should require that all end-use product labels (e.g., MAI labels, SLNs, and products subject to the generic data exemption) be amended such that they are consistent with the labels of the basic registrants.

For the purpose of generating this Residue Chemistry Chapter, the Agency compared the diuron food/feed uses currently registered to Griffin, Drexel, Du Pont, and Aventis (Table A2) with the available crop field trial data. As a result, label amendments are required for some formulations, as specified below.

For apple, the label for the 4 lb/gal FIC [EPA Reg. No. 19713-36] formulation must be amended to correct an apparent typographical error. The label currently states “Apply 4 pounds per acre in the Spring;” this should be modified to state “Apply 3.2 quarts per acre in the Spring.” Once corrected, the maximum application rate for apples will be 3.2 lb ai/A, which is the maximum rate supported by available field trial data.

For banana, the labels for the 4 lb/gal FIC [EPA Reg. Nos. 1812-257 and 19713-36], 80% DF [EPA Reg. No. 1812-362] and 80% WP [EPA Reg. No. 19713-274] formulations must be modified to specify that application may only be made to bananas grown in HI.

For citrus fruits, the product labels for the 4 lb/gal FIC [EPA Reg. Nos. 1812-257 and 19713-36], 40% DF [EPA Reg. No. 352-505], 80% DF [EPA Reg. No. 1812-362] and 80% WP [EPA Reg. No. 19713-274] formulations must be modified to specify the following maximum seasonal application rates: 6.4 lb ai/A for FL and PR, and 3.2 lb ai/A for all other areas.

For corn, the labels for the 4 lb/gal FIC [EPA Reg. Nos. 1812-257 and 19713-36], 80% DF [EPA Reg. No. 1812-362], and 80% WP [EPA Reg. No. 19713-274] formulations must be amended to make it clear, under the use directions for “Corn (field)” that application is only to be made to field corn or popcorn.

For cotton, the labels for the 4 lb/gal FIC [EPA Reg. Nos. 1812-257 and 19713-36], 80% DF [EPA Reg. No. 1812-362], and 80% WP [EPA Reg. No. 19713-274] formulations must be amended to remove the maximum seasonal rate for application to cotton in loamy sand soils because the labels also state that application should not be made to loamy sand soils.

For cotton, the labels for the 25% WP [EPA Reg. No. 264-661] and 0.5 lb/gal EC [EPA Reg. No. 264-634] formulations must be modified to remove the restriction against the feeding of cotton gin byproducts to livestock. The Agency does not believe that this restriction is practical.

For grass seed crops, current product labels allow application at up to 3.2 lb ai/A in the fall or up to 2.4-3.2 lb ai/A in the spring (depending on geographical location). No data reflecting spring application at

2.4-3.2 lb ai/A are available. The registrants must modify product labels to specify a maximum application rate of 1.6 lb ai/A for spring applications. Alternatively, crop field trial data reflecting spring application at 2.4-3.2 lb ai/A may be submitted.

For winter wheat, the labels for the 4 lb/gal FIC [EPA Reg. No. 1812-257] and the 80% DF [EPA Reg. No. 1812-362] formulations must be modified. The heading “Other Areas of Oregon and Washington” should be modified to state “Other Areas.”

The products labels for EPA Reg. Nos. 19713-36 and 19713-274 include use directions for Bermudagrass. The use of diuron on Bermudagrass is not supported by field trial data or any tolerances. Tolerances for diuron residues in Bermudagrass forage and hay had previously been established; however, these tolerances were revoked in 1998. The use directions for Bermudagrass must be removed from the product labels for EPA Reg. Nos. 19713-36 and 19713-274.

SLN CA850060 is associated with EPA Reg. No. 254-247, a diuron product that was canceled in 1996. In addition, the use on SLN CA850060 is a use on lakes, ponds, holding basins, and other similar sites which may be used for irrigation. No data to support these uses are available; therefore, SLN CA850060 should be canceled.

Rotational crop restrictions should be made consistent between various formulations. A 2-year plant back interval may not be practical unless phytotoxicity is a concern.